

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of manufacturing a crystalline semiconductor film comprising silicon, said method comprising:

a first step of adding a metallic element for promoting crystallization of an amorphous semiconductor film to an insulating surface by a spin addition method;

a second step of depositing an amorphous semiconductor film containing silicon on the insulating substrate surface; and

a third step of forming [[a]] the crystalline semiconductor film containing silicon by heat treating the amorphous semiconductor film;

wherein [[the]] a rotational acceleration speed in the spin addition method is from 5 to 120 rpm/sec.

2. (Currently Amended) A method of manufacturing a crystalline semiconductor film comprising silicon, said method comprising:

a first step of depositing an amorphous semiconductor film containing silicon on an insulating substrate surface;

a second step of depositing a mask insulating film on the amorphous semiconductor film, and forming an opening region in a portion of the mask insulating film;

a third step of adding a metallic element for promoting crystallization to the mask insulating film by a spin addition method; and

a fourth step of forming [[a]] the crystalline semiconductor film by heat treating the amorphous semiconductor film;

wherein [[the]] a rotational acceleration speed in the spin addition method is from 5 to 120 rpm/sec.

3. (Currently Amended) A method of manufacturing a crystalline semiconductor film, comprising silicon, said method comprising:

a first step of adding a metallic element for promoting crystallization of an amorphous semiconductor film to an insulating surface substrate by a spin addition method;

a second step of depositing an amorphous semiconductor film containing silicon on the insulating substrate surface; and

a third step of forming [[a]] the crystalline semiconductor film containing silicon by heat treating the amorphous semiconductor film;

wherein [[the]] a rotational acceleration speed y in the spin addition method satisfies $y = Ax^{-B}$ (where x is the diagonal dimension of [[the]] a substrate having the insulating surface, and A and B are constant).

4. (Currently Amended) A method of manufacturing a crystalline semiconductor film comprising silicon, said method comprising:

a first step of depositing an amorphous semiconductor film containing silicon on an insulating surface substrate;

a second step of depositing a mask insulating film on the amorphous semiconductor film, and forming an opening region in a portion of the mask insulating film;

a third step of adding a catalyst element metallic element for promoting crystallization to the mask insulating film by a spin addition method; and

a fourth step of forming a crystalline semiconductor film by heat treating the amorphous semiconductor film;

wherein [[the]] a rotational acceleration speed y in the spin addition method satisfies $y=Ax^{-B}$ (where x is the diagonal dimension of [[the]] a substrate having the insulating surface, and A and B are constant).

5. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein a substrate having the insulating substrate surface has a square shape.

6. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein a substrate having the insulating substrate surface has a square shape.

7. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 3, wherein the insulating substrate has a square shape.

8. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 4, wherein the insulating substrate has a square shape.

9. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein the length of a diagonal of ~~the insulating~~ a substrate having the insulating surface is equal to or larger than 500 mm.

10. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein the length of a diagonal of ~~the insulating~~ a substrate having the insulating surface is equal to or larger than 500 mm.

11. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 3, wherein the length of a diagonal of the insulating substrate is equal to or larger than 500 mm.

12. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 4, wherein the length of a diagonal of the insulating substrate is equal to or larger than 500 mm.

13. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein the maximum value of [[the]] a rotational velocity in the spin addition method is from 800 to 1200 rpm.

14. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein the maximum value of [[the]] a rotational velocity in the spin addition method is from 800 to 1200 rpm.

15. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 3, wherein the maximum value of [[the]] a rotational velocity in the spin addition method is from 800 to 1200 rpm.

16. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 4, wherein the maximum value of [[the]] a rotational velocity in the spin addition method is from 800 to 1200 rpm.

17. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein in the second first step is one in which a solution containing the metallic element is dripped onto the insulating substrate while the substrate is rotating surface.

18. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein in the second third step is one in which a solution containing the metallic element is dripped onto the mask insulating film substrate while the substrate is rotating.

19. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 3, wherein in the second first step is one in which a solution containing the metallic element is dripped onto the insulating substrate while the substrate is rotating surface.

20. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 4, wherein in the second third step is one in which a solution containing the metallic element is dripped onto the mask insulating film substrate while the substrate is rotating.

21. (Original) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein the metallic element is added by spinning using a solution containing one element, or a plurality of elements, selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

22. (Original) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein the metallic element is added by spinning using a solution containing one element, or a plurality of elements, selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

23. (Original) A method of manufacturing a crystalline semiconductor film according to claim 3, wherein the metallic element is added by spinning using a solution

containing one element, or a plurality of elements, selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

24. (Original) A method of manufacturing a crystalline semiconductor film according to claim 4, wherein the metallic element is added by spinning using a solution containing one element, or a plurality of elements, selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

25. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein the metallic element ~~for promoting crystallization of the amorphous semiconductor film~~ is added to the insulating surface of a base film by [[a]] the spin addition method after forming [[a]] the base film on the insulating a substrate.

26. (Currently Amended) A method of manufacturing a crystalline semiconductor film according to claim 3, wherein the metallic element ~~for promoting crystallization of the amorphous semiconductor film~~ is added to the insulating surface of a base film by [[a]] the spin addition method after forming [[a]] the base film on the insulating substrate.

27.-32. (Canceled)

33. (New) A method of manufacturing a crystalline semiconductor film containing silicon, said method comprising:

providing a metallic element for promoting crystallization on an insulating surface while rotating the insulating surface;

providing an amorphous semiconductor film containing silicon on the insulating surface; and

heating the amorphous semiconductor film to form the crystalline semiconductor film;

wherein a rotational acceleration speed in rotating the insulating surface is from 5 to 120 rpm/sec.

34 (New) A method of manufacturing a crystalline semiconductor film containing silicon, said method comprising:

providing an amorphous semiconductor film containing silicon on an insulating surface;

providing an insulating film as a mask on the amorphous semiconductor film;

forming an opening in a portion of the insulating film;

providing a metallic element for promoting crystallization on the opening while rotating the insulating surface; and

heating the amorphous semiconductor film to form the crystalline semiconductor film;

wherein a rotational acceleration speed in rotating the insulating surface is from 5 to 120 rpm/sec.

35 (New) A method of manufacturing a crystalline semiconductor film containing silicon, said method comprising:

providing a metallic element for promoting crystallization on an insulating surface that a substrate has while rotating the substrate;

providing an amorphous semiconductor film containing silicon on the insulating surface; and

heating the amorphous semiconductor film to form the crystalline semiconductor film;

wherein a rotational acceleration speed y in rotating the substrate satisfies $y=Ax^{-B}$ (where x is the diagonal dimension of the substrate, and A and B are constant).

36 (New) A method of manufacturing a crystalline semiconductor film containing silicon, said method comprising:

providing an amorphous semiconductor film on an insulating surface that a substrate has;

providing an insulating film as a mask on the amorphous semiconductor film;

forming an opening in a portion of the insulating film;

providing a metallic element for promoting crystallization on the opening while rotating the substrate; and

heating the amorphous semiconductor film to form the crystalline semiconductor film;

wherein a rotational acceleration speed y in rotating the substrate satisfies $y=Ax^{-B}$ (where x is the diagonal dimension of the substrate, and A and B are constant).

37. (New) A method of manufacturing a crystalline semiconductor film according to claim 33, wherein a substrate has the insulating surface.

38. (New) A method of manufacturing a crystalline semiconductor film according to claim 34, wherein a substrate has the insulating surface.

39. (New) A method of manufacturing a crystalline semiconductor film according to claim 37, wherein the substrate has a square shape.

40. (New) A method of manufacturing a crystalline semiconductor film according to claim 38, wherein the substrate has a square shape.

41. (New) A method of manufacturing a crystalline semiconductor film according to claim 35, wherein the substrate has a square shape.

42. (New) A method of manufacturing a crystalline semiconductor film according to claim 36, wherein the substrate has a square shape.

43. (New) A method of manufacturing a crystalline semiconductor film according to claim 37, wherein the length of a diagonal of the substrate is equal to or larger than 500 mm.

44. (New) A method of manufacturing a crystalline semiconductor film according to claim 38, wherein the length of a diagonal of the substrate is equal to or larger than 500 mm.

45. (New) A method of manufacturing a crystalline semiconductor film according to claim 35, wherein the length of a diagonal of the substrate is equal to or larger than 500 mm.

46. (New) A method of manufacturing a crystalline semiconductor film according to claim 36, wherein the length of a diagonal of the substrate is equal to or larger than 500 mm.

47. (New) A method of manufacturing a crystalline semiconductor film according to claim 37, wherein the maximum value of a rotational velocity in rotating the substrate is from 800 to 1200 rpm.

48. (New) A method of manufacturing a crystalline semiconductor film according to claim 38, wherein the maximum value of a rotational velocity in rotating the substrate is from 800 to 1200 rpm.

49. (New) A method of manufacturing a crystalline semiconductor film according to claim 35, wherein the maximum value of a rotational velocity in rotating the substrate is from 800 to 1200 rpm.

50. (New) A method of manufacturing a crystalline semiconductor film according to claim 36, wherein the maximum value of a rotational velocity in rotating the substrate is from 800 to 1200 rpm.

51. (New) A method of manufacturing a crystalline semiconductor film according to claim 33, wherein a solution including the metallic element is dripped onto the insulating surface.

52. (New) A method of manufacturing a crystalline semiconductor film according to claim 34, wherein a part of a solution including the metallic element is dripped onto the opening.

53. (New) A method of manufacturing a crystalline semiconductor film according to claim 35, wherein a solution including the metallic element is dripped onto the insulating surface.

54. (New) A method of manufacturing a crystalline semiconductor film according to claim 36, wherein a part of a solution including the metallic element is dripped onto the opening.

55. (New) A method of manufacturing a crystalline semiconductor film according to claim 33, wherein the metallic element is at least one element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

56. (New) A method of manufacturing a crystalline semiconductor film according to claim 34, wherein the metallic element is at least one element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

57. (New) A method of manufacturing a crystalline semiconductor film according to claim 35, wherein the metallic element is at least one element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

58. (New) A method of manufacturing a crystalline semiconductor film according to claim 36, wherein the metallic element is at least one element selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

59. (New) A method of manufacturing a crystalline semiconductor film according to claim 1, wherein a substrate has the insulating surface.

60. (New) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein a substrate has the insulating surface.

61. (New) A method of manufacturing a crystalline semiconductor film according to claim 2, wherein the amorphous semiconductor film is deposited on the insulating surface of a base film after forming the base film on a substrate.

62. (New) A method of manufacturing a crystalline semiconductor film according to claim 4, wherein the amorphous semiconductor film is deposited on the insulating surface of a base film after forming the base film on the substrate.

63. (New) A method of manufacturing a crystalline semiconductor film according to claim 33, further comprising: forming a base film having the insulating surface on a substrate before providing the metallic element on the insulating surface.

64. (New) A method of manufacturing a crystalline semiconductor film according to claim 34, further comprising: forming a base film having the insulating surface on a substrate before providing the amorphous semiconductor film on the insulating surface.

65. (New) A method of manufacturing a crystalline semiconductor film according to claim 35, further comprising: forming a base film having the insulating surface on the substrate before providing the metallic element on the insulating surface.

66. (New) A method of manufacturing a crystalline semiconductor film according to claim 36, further comprising: forming a base film having the insulating surface on the substrate before providing the amorphous semiconductor film on the insulating surface.